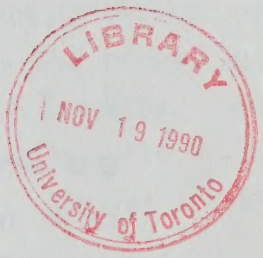
PLANT BREEDER'S RIGHTS

Current Issue Review 79-4E

PLANT BREEDERS' RIGHTS



Thomas Curren
Science and Technology Division

16 August 1979
Reviewed 17 April 1990

Library of Parliament
Bibliothèque du Parlement

Research Branch

The Research Branch of the Library of Parliament works exclusively for Parliament, conducting research and providing information for Committees and Members of the Senate and the House of Commons. This service is extended without partisan bias in such forms as Reports, Background Papers and Issue Reviews. Research Officers in the Branch are also available for personal consultation in their respective fields of expertise.

Cat. No. YM32-1/79-4-1990-04E

ISBN 0-660-13658-9

N.B. Any substantive changes in this publication which have been made since the preceding issue are indicated in **bold print.**

CE DOCUMENT EST AUSSI PUBLIÉ EN FRANÇAIS

PLANT BREEDERS' RIGHTS

ISSUE DEFINITION

On 8 May 1989, Bill C-15, the Plant Breeders' Rights Act, was given first reading in the House of Commons. Two similar bills, Bill C-32 (1980) and Bill C-107 (1988), had been introduced in the House of Commons but never reached second reading.

The concept of plant breeders' rights is related to that of the patenting of industrial inventions and the collection of royalties, a system that is well-established in Canadian industry. Under this legislation, breeders of commercial crop varieties will be able to collect royalties from the sale of their creations. Similar legislation exists, or is pending, in most industrialized nations.

The breeding of new varieties of crop plants is an important component of agriculture in Canada. The major aim of the legislation is to stimulate variety breeding in private industry. However, some observers are concerned that the legislation may have some detrimental effects, including a decrease in support for public sector plant breeding which currently is predominant in Canada.

BACKGROUND AND ANALYSIS

A. Crop Varieties and Plant Breeding

It is necessary, before embarking on a discussion of plant breeders' rights per se, to consider the subject of crop varieties and plant breeding. As a working definition, a "crop" is any plant which is

cultivated by man and includes plants grown for food, animal feed, fibre, and for utilitarian and ornamental purposes.

The outward appearance and physical structure of a plant, its phenotype, is determined by two factors. The most obvious determinant is the plant's genetic makeup, or genotype. A plant's appearance may also be greatly influenced by environmental conditions such as soil type and fertility, length of day, temperature, air moisture, rainfall, and so on. Although these numerous factors can interact to affect the appearance, and thus the accurate identification of plants, botanists are able to classify individual plants into specific groupings. Thus, in order of increasing specificity, plants are classified into division, class, order, family, genus, species and variety. At the variety level, a crop plant will have a very specifically defined genetic makeup. Indeed, crop varieties are, in a sense, the creations of man, exactingly constructed from nature's genetic raw materials through years, perhaps decades, of careful breeding to fulfill a special role within an advanced agricultural system.

For the botanist, and the agriculturalist, the operational basis of the system of crop plants is the species. Thus, a cabbage belongs to a particular species, as do potatoes, peas, apples and wheat. But a grower does not purchase seed identified by species alone; he chooses a particular variety of crop which is, as noted above, a subdivision within the species. He will choose one variety of wheat over another, for example, because it will have certain advantages for his particular growing conditions and for his particular needs.

Although the term "variety" does not have a definition that is completely acceptable to all authorities in the field, the Commission on the Nomenclature of Cultivated Plants of the International Association of Biological Sciences has propounded a definition for "cultivar" that has been adopted in Canadian legislation to define the term "variety" as:

> "...an assemblage of cultivated plants, including hybrids constituted by controlled cross-polination, that
> (i) are distinguished by common morphological, physiological, cytological, chemical or other characteristics; and

(ii) retain their distinguishing characteristics when reproduced."(1)

For regulatory purposes, therefore, a new crop variety must fulfill three prerequisites: (i) distinguishability by one or more important characteristics; (ii) homogeneity or uniformity within the cultivated population; and (iii) stability of the variety from generation to generation with repeated reproduction. These are exacting requirements and even though the system has some inherent difficulties, particularly with distinguishability, it is workable. The Canadian variety registration program, authorized under the Seeds Act,(2) uses such a system and it has operated effectively for many years.

The crops cultivated today, particularly in the highly advanced agricultural systems of the industrialized nations, often bear scant resemblance to their primitive ancestors. In nature, and in some primitive agricultural societies, crop plants typically grow (or are cultivated) in genetically mixed or heterogeneous "populations", a situation which is in direct contrast to that which exists in North America. Here, a single, homogeneous variety of wheat or corn may be cultivated on huge, contiguous fields numbering in the hundreds of thousands of hectares. Primitive, or "wild", populations are, at best, roughly selected accumulations of plants of one or several interbreeding varieties growing in the same location and possessing manifold characteristics with respect to yield, maturation time, drought and disease resistance, and other traits.

The dynamic linkage between a primitive crop species and a modern crop variety is the science (and art) of plant breeding. The improvement of cultivated crops has continued since the dawn of agriculture when the first farmers selected, from among the different species and from various "strains" within a species, those plants which appeared to be

---

(1) Regulations Under the Seeds Act Applicable to All Seeds Other than Seed Potatoes, Working Copy, Plant Products Division, Agriculture Canada, May 1977, s. 2(q).

(2) Seeds Act, R.S.C. 1970, c. S-7, s. 3(1)(6) and s. 4(2)(a).

higher yielding, of higher quality or which had other obvious advantages. This primitive "art" of breeding by selection led to a steady improvement in overall crop quality and, in effect, underwrote the progressive development of human civilization. The great breakthrough did not come, however, until the beginning of the present century when Mendel's laws of heredity, originally propounded in 1866, were rediscovered and the foundation of the modern science of genetics was established. At this point the science and industry of systematic plant breeding began, although initial progress was slow because Mendel's pioneer work did not recognize the more complex aspects of inheritance that are important to the plant breeder.

There are two major goals in a crop breeding program. One is to provide improved crop varieties for established areas of cultivation, and the second is to produce new varieties of particular crops to permit their extension into new areas of cultivation. Increasingly sophisticated methods of plant breeding have been developed to create new crop varieties to satisfy the needs and desires of human society. The impact of this development has been enormous, for the agricultural enterprise and for society as a whole. It is an historical fact that the settlement of the Canadian West was to a large degree facilitated by the development of a single, superior variety of wheat, Marquis, produced in Ottawa by a plant breeder with the federal Department of Agriculture. Many other examples could be cited, including soybeans, rape and, especially, hybrid corn whose yields and regions of cultivation have been increased tremendously in the last half century.

Plant breeding can be roughly divided into four interlocking procedures: (i) breeding by selection; (ii) breeding by combination; (iii) breeding by hybridization; and (iv) breeding by mutation.

In the first category, breeding by selection, individual plants with favourable characteristics are selected and propagated. This is termed positive selection. Conversely, plants with undesirable traits are eliminated from the grower's stock by negative selection. However, individual selections will often have both positive and negative traits and there are important examples where extremely valuable varieties ultimately

have been bred from primitive parental strains that had only one or two desirable traits but were replete with negative qualities.

Breeding by combination logically follows from a program of careful selection. This technique, the classical procedure of plant breeding, involves the systematic crossing (mating) of selections of a species of different genotypes to create heterogeneous progeny containing a broader range of characteristics which may then be used in further breeding programs. A certain degree of gene combination will occur in nature through random crossbreeding, but human intervention has injected both direction and efficiency into the natural process. To quote the Russian geneticist, N.I. Vavilov, "Breeding ... is evolution directed by the will of man."

Hybridization represents a progression from selection and combination breeding. Inbred crop lines -- lines developed by self-fertilization -- are crossed to create a hybrid variety. Thus, a hybrid is created by mixing, in a single variety, the diverse genetic constitutions of two separate inbred varieties. Such varieties often show a marked degree of hybrid vigour: that is, they will produce a crop that is much more productive than either of the parent varieties.

The disadvantage of hybrids is that their hybrid vigour and uniformity are not usually transmitted to a sufficient extent to the next generation to allow the farmer to produce his own seed for subsequent planting. New seed can only be produced by the breeder using the parent inbred lines. However, the many advantages conferred by hybrids more than compensate for the cost of having to buy new seed each year from the breeder.

Mutation breeding involves the intentional changing (mutation) of the genotype of breeding lines using chemical mutagens or radiation. This technique perhaps has more prestige than practicality but it can be a useful tool for the plant breeder and some superior varieties have been developed using this technique.

B. Variety Registration

Many of Canada's most important agricultural crops are subject to variety registration by Agriculture Canada. Included under this program are cereals such as wheat and oats; field crops such as potatoes and field corn; forages (alfalfa, birds-foot trefoil, etc.); oilseeds such as rape and soybeans; and lawn and turf grasses. Specifically, it is the seeds of such crops that are subject to variety registration. In this context, a "seed" includes any plant part that is used to grow a plant; both sexual and asexual reproductive materials are regarded as seeds. The seeds of root crops, vegetables (except potatoes), herbs, flowers and trees are currently exempt from variety registration requirements.

Variety registration for at least some crops has been required in Canada since 1923. Under the Seeds Act, the Registrar is authorized to register the seed of those varieties that may be sold or advertised in Canada or imported into Canada. A list of varieties registered under the Seeds Act is published quarterly by the Seed Division of Agriculture Canada.

In most instances, three years' data from variety performance tests are required on the agronomic and quality characteristics of the variety before it can be considered for registration. Included among the requirements are a detailed description of the variety respecting type, growth habits, period of maturity, range of adaptability, disease reaction, winter hardiness in the case of perennial and biennial crops, distinguishing morphological characteristics, and other characteristics, desirable or undesirable. The name of the variety is important and must also be acceptable. The application for registration must be accompanied by a recommendation from a recognized provincial or regional agricultural committee or from a qualified official on the staff of a recognized Canadian agricultural institution. An important consideration prerequisite to the granting of registration is that the candidate variety must be proven to have an advantage for Canadian agriculture.

The present registration arrangements are effective in practice in that inferior varieties, the sale of which would be detrimental

to Canadian agriculture, are excluded from the market while desirable new varieties can be efficiently approved for sale and/or importation.

C. International Aspects

The organization concerned with international aspects of plant breeders' rights is UPOV, L'union internationale pour la protection des obtentions végétales; the "International Union for the Protection of New Plant Varieties". UPOV is an independent body headquartered in Geneva.

For many years, plant breeders in Western Europe particularly had been discussing the need for some form of international cooperation on plant breeders' rights among those nations who had breeders' rights legislation. Finally, in 1957, the French Government convened a diplomatic conference on the subject. The outcome of this conference was the signing, on December 2, 1961, of an International Convention for the Protection of New Varieties of Plants. The signatories were Belgium, Denmark, France, West Germany, Italy, the Netherlands, Switzerland and the United Kingdom. The Convention became effective in August 1968 when it was ratified by the Netherlands, West Germany and the United Kingdom.

Two important factors prompted the creation of UPOV. First, there was the basic principle of conferring on a plant breeder the right to profit from the creation of a new and valuable crop variety. In the absence of rights legislation, a breeder could not be guaranteed adequate remuneration for his efforts and this was considered to be a major deterrent to plant breeding. Second, following World War II, several European nations enacted plant breeders' rights legislation independently and this created obvious difficulties where the same variety was found to be useful in more than one country. An agreement was thus required to provide international protection for a new crop variety similar to that granted for intellectual property and for industrial patents.

The UPOV Convention is generally applicable to all plants. Application of the Convention by member states is progressive and gradual. The reason for a gradual approach is based on administrative and economic factors: new varieties have to be tested before they are listed and the construction and maintenance of testing facilities requires considerable

time, funding and expertise. Each member state, at the time of joining UPOV, is required to apply the provisions of the Convention to at least five genera or species. Further, within three years, at least 10 genera or species shall be accorded variety protection; within six years, at least 18 genera or species; and within eight years, a total of at least 24 genera or species in all. Most individual UPOV member states have accorded variety protection to many more species than are recommended by the Convention.

The granting of protection under the UPOV Convention is subject to four basic prerequisites:

(i) the variety must be new and clearly distinguishable;

(ii) the variety must be sufficiently homogeneous;

(iii) the variety must be stable; and

(iv) the variety must be given a denomination (name).

Varieties must pass official examination before they can be listed under the Convention. The period of protection for a variety is limited to "not less than fifteen years" for most crops and "not less than eighteen years" for perennial species such as vines and fruit trees.

The Secretariat, also called the Bureau of UPOV, performs the day-to-day functions of the Union and has effected an agreement between UPOV and the World Intellectual Property Organization (WIPO). The Director General of WIPO is also the Secretary General of UPOV.

The current membership of UPOV includes Belgium, Denmark, France, West Germany, Hungary, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, South Africa, Spain, Sweden, Switzerland, the United Kingdom and the United States. In October 1978, the UPOV Convention was revised to make it possible for other countries which have, or are preparing, compatible plant breeders' rights legislation to join the union. Sixteen states signed the 1978 Convention: in addition to the states listed above are Canada and Mexico. (Hungary, Israel and Spain did not sign the 1978 Convention, but have ratified it.) By signing, these states have indicated their intention to join the union but they are not obligated to do so. Officials at Agriculture Canada will probably recommend that Canada join UPOV if a Plant Breeders' Rights Act is adopted.

D. Breeders' Rights Legislation in Canada

Bill C-107, the Plant Breeders' Rights Act, includes a number of basic components that would allow Canada to join UPOV.

(1) The breeder of a new, distinct, uniform, stable variety would be granted the exclusive right to multiply and/or to sell reproductive material of the variety;
(2) Other persons who wish to multiply the variety for sale or to sell the variety could do so subject to conditions set by the breeder, including the payment of royalties;
(3) Varieties currently on the market would not be eligible for protection under the new legislation;
(4) Anyone who wished to use a protected variety for further plant breeding would be able to do so freely. This would not, however, include the repeated use of a protected variety in the commercial production of another variety as, for example, in the production of a hybrid variety;
(5) Registration of a new variety would be voluntary;
(6) Protection would last for a limited period; the 18-year period proposed would be consistent with the International Convention and with United States legislation;
(7) The enforcement of rights would be the responsibility of the breeder through the civil courts;
(8) If a breeder's rights were deemed to be in conflict with the public interest, the rights would be subject to restriction by the regulatory authority;
(9) An Advisory Committee of all interested parties -- including farmers, nurserymen, plant breeders, seed merchants, etc. -- might be established to advise on the administration of the legislation.

An important safeguard in the plant breeders' rights system would be the maintenance of the present variety registration system. There is a subtle distinction involved in this point. A variety acceptable for registration under the plant breeders' rights law would not necessarily be acceptable for registration under the Seeds Act if it had no advantage for Canadian agriculture.

The major purpose of a plant breeders' rights law would be to stimulate private plant breeding in Canada by allowing breeders to collect royalties for a limited period. If public plant breeding remains unchanged, the result will be an increase in the total breeding effort in

Canada. At present, public breeding is predominant in Canada. Departmental spokesmen have stated on numerous occasions that the public breeding effort would remain unchanged, or even increase, while the number of private breeders would increase as a consequence of legislation. Supporting this contention is the fact that new varieties developed by public breeders will also qualify for the collection of royalties. This situation should be particularly advantageous for university breeders and should protect the viability of their breeding programs.

Reciprocity with UPOV member states would be another major advantage of proposed Canadian legislation. Canadian breeders would be able to collect royalties on Canadian varieties sold abroad. Currently, our varieties are essentially "given away" to foreign growers without remuneration. A second advantage of reciprocity would be improved access of Canadian growers to protected foreign varieties, particularly those with a regional application in Canada.

E. Issues To Be Resolved

As with any new legislation in an important and sensitive area, the proposed Plant Breeders' Rights Act engendered considerable concern about its potential effects on Canadian agriculture. In spite of the Departmental assurances noted above, a major worry remains that, as plant breeding in private industry increases, there would be a decrease in the quantity and quality of plant breeding in the public sector. It has been suggested that the current trend toward reduced government spending and government involvement in the private sector would inevitably have a negative effect on public sector plant breeding in Agriculture Canada and in the universities. Therefore, to underline the importance of maintaining public breeding in Canada, a number of possible effects of a diminished public program are discussed below.

First, this development would nullify one of the major aims of the proposed legislation, that is, to stimulate an overall increase in the breeding effort in Canada.

Further, systematic plant breeding is a multi-component enterprise. The breeder, to function efficiently, needs to maintain

intimate working contact with plant physiologists, agronomists, plant pathologists and entomologists as he develops and selects crop varieties with superior characteristics. Most of these scientists are employed in the public sector and if there is a major shift from public to private breeding, this critically important relationship could be impaired.

There is also concern that the role of the public sector plant breeder might change, even if the numbers do not decrease. Two effects are possible. First, there could be a shift in public sector breeding away from major crops, such as wheat and rapeseed, to minor crops with a narrowly regional application. Second, the public breeder could be required to concentrate his efforts on the development of improved breeding material (germplasm) which would then be supplied to the private plant breeder who would ultimately produce the new crop varieties. There is a suggestion that this has happened to some degree in the United States but it is not certain that the change is due to adoption of the Plant Variety Protection Act. Such a division of labour would have an adverse effect on the morale of the public breeder since a breeder derives his principal satisfaction and motivation from the production of a successful commercial variety.

Any reduction in the numbers of public sector breeders or a change in the role of university breeders would adversely affect the training of graduate students in plant breeding. A prospective plant breeder needs to work beside an experienced breeder in a viable breeding program if he is to obtain the knowledge and experience essential to his profession.

In addition to the issue of the public breeding program, there are other concerns. Private plant breeders employed by industry would be in competition with each other. There is a concern that this competition would inhibit the exchange of valuable germplasm between and among breeders. While new varieties ultimately will be available to all breeders to use in their research, there would be a delay in the free distribution of valuable genetic material and some valuable germplasm might never be utilized if it is not incorporated into a commercial variety.

There is general agreement that seed prices rise once breeders' rights legislation has been adopted because private industry research programs have to be financed through seed sales and royalty collections. This is not expected to be a major factor in Canada, however, because almost all varieties developed through public breeding programs (at Agriculture Canada and universities) are marketed through the SeCan Association which collects levies and royalties on sales of seed of new varieties. In some cases the royalties are returned to the plant breeder. SeCan is an association of seed growers and seed firms with some 2,200 members; membership in the association is voluntary. In a sense, SeCan is operating a partial "breeders' rights" system by marketing certified seed of crops covered by Agriculture Canada's variety registration system.

Another economic issue concerns the cost to Canada of reciprocal breeders' rights protection with other nations. It is not yet known if the royalties our growers will pay to foreign breeders will exceed, or be balanced by, royalties paid to Canadian breeders by foreign growers once a significant trade in protected varieties is established.

The high cost of successful breeding programs introduces the concern that a small number of large multinational corporations will eventually dominate the Canadian market. In addition to controlling private breeding, the large corporations might also eventually control the growing of commercial seed. Departmental spokesmen aver that both these developments are very unlikely to occur in Canada.

First, the multinationals will have to develop successful breeding programs in Canada in order to dominate the industry. Second, the Agriculture Department argues that multinationals will only dominate the industry if the public breeding program is seriously diminished and if the private varieties are superior. With respect to the growing of commercial seed, Departmental spokesmen argue that foreign control is unlikely because of the diffuse nature of the seed growing industry in Canada.

The dollar cost of administering the new Act has not been documented. The Department has stated that administration costs will be financed through variety registration fees. No other nation has succeeded in doing this.

The cost of joining UPOV, should this be decided, has also not been documented.

The Department has not described how a pre-registration variety examination system will operate in Canada, other than to indicate that it will be similar to the American computerized system, rather than the very expensive European system of comparative field testing.

PARLIAMENTARY ACTION

The Plant Breeders' Rights Act, Bill C-32, was given first reading in the House of Commons on May 29, 1980. Bill C-32 was never given second reading and the bill died when Parliament was dissolved for the 1984 election.

On January 28, 1988, the Plant Breeders' Rights Act, Bill C-107, was given first reading in the House of Commons. The bill did not proceed to second reading.

On 8 May 1989, Bill C-15 received first reading in the House of Commons. The new bill was generally similar to Bill C-107. Bill C-15 passed second reading in the House on 27 June 1989 and was referred to a Legislative Committee. The committee reported the amended Bill C-15 back to the House of Commons on 29 November 1989.

CHRONOLOGY

1876 - The German Patent Act was introduced under which plant patents could be granted.

1923 - The Canadian Horticultural Council recommended the introduction of plant patent legislation in Canada.

1930 - The United States Plant Patent Act was introduced but applied only to asexually reproduced plants.

1938 - Plant breeders from France, Germany, Holland and Denmark created the International Association of Plant Breeders for Plant Variety Protection (ASSINSEL).

1938 - The Patent Office in Austria granted a patent for a variety of pea.

1941 - The Netherlands adopted legislation for the protection of plant varieties and the commercialization of seed.

1950 - A Canadian Plant Patent Act was drafted but was not introduced in Parliament.

1950 - A test application by a private firm to obtain a plant patent under the Canadian Patent Act failed to receive approval.

1957 - The French Government convened an international diplomatic conference to discuss an international convention for plant variety protection.

1960 - The Ilsley Royal Commission on Patents, Copyright and Industrial Designs published a Report on Patents of Invention and rejected a proposal that the Patent Act of Canada should be used for protection of ornamental plant varieties.

1961 - The "Paris Convention" was signed by six Western European states, creating the International Union for the Protection of New Varieties of Plants (UPOV).

1964 - The United Kingdom and South Africa adopted plant variety protection legislation.

1966 - A committee of Agriculture Canada recommended against plant variety protection legislation on the grounds that comparable legislation did not exist in the United States.

1970 - The United States adopted the Plant Variety Protection Act.

1970 - France adopted plant variety protection legislation.

1971 - Sweden adopted plant variety protection legislation.

1971 - The University of Guelph sponsored a conference on "Plant Breeders' Rights in Canada". The conference concluded that a system of plant variety protection was essential in Canada and recommended that the Canadian Agricultural Services Coordinating Committee (CASCC) accept the principle of such legislation.

1972-73 - The CASCC agreed in principle that plant breeders' rights legislation would be desirable in Canada. Agriculture Canada was requested to draft a policy memorandum for internal study by the CASCC.

1973 - New Zealand adopted plant variety protection legislation.

1974 - Agriculture Canada endorsed the CASCC proposal and appointed a consultant to draft a policy memorandum.

1978 - A Plant Breeders' Rights bill was drafted by the Department of Justice for introduction in the House of Commons.

1978 - A revised International Convention for the Protection of New Varieties of Plants was adopted by UPOV.

1980 - Bill C-32, the Plant Breeders' Rights Act, was introduced in the House of Commons and given first reading on 29 May 1980.

1980 - Ireland adopted plant variety protection legislation.

1984 - Bill C-32 died when Parliament was dissolved.

February 1987 - The Australian Parliament passed plant breeders' rights legislation, the Plant Variety Rights Act.

28 January 1988 - Bill C-107, the Plant Breeders' Rights Act, was given first reading in the House of Commons.

8 May 1989 - Bill C-15, the Plant Breeders' Rights Act, was given first reading in the House of Commons. Except for re-ordering of clauses and minor editorial changes, the bill is almost identical to C-107, which did not proceed to second reading.

27 June 1989 - Bill C-15 passed second reading in the House of Commons and was referred to a Legislative Committee.

29 November 1989 - The Legislative Committee on Bill C-15 reported the amended bill back to the House of Commons.

APPENDIX 1

STATES WITH PLANT BREEDERS' RIGHTS LEGISLATION

Country	Member of UPOV	Signed Amended UPOV Convention
*Algeria	No	No
Argentina	No	No
Australia	**Yes**	**Yes**
Austria	No	No
Belgium	Yes	Yes
Bulgaria	No	No
*Canada	No	Yes
Chile	No	No
Cuba	No	No
Denmark	Yes	Yes
France	Yes	Yes
Federal Republic of Germany	Yes	Yes
Finland	No	No
German Democratic Republic	No	No
Hungary	Yes	No
Ireland	Yes	Yes
Israel	Yes	No
Italy	Yes	Yes
Japan	Yes	Yes
*Kenya	No	No
*Mexico	No	Yes
*Morocco	No	No
Netherlands	Yes	Yes
New Zealand	Yes	Yes
*Norway	No	No
Poland	**Yes**	**Yes**
Romania	No	No
Republic of South Africa	Yes	Yes
Spain	Yes	Yes
Sweden	Yes	Yes
Switzerland	Yes	Yes
Union of Soviet Socialist Republics	No	No
United Kingdom	Yes	Yes
United States of America	Yes	Yes

* Legislation not yet known to be in force.

SELECTED REFERENCES

(1) Canada Grains Council, Plant Breeders' Rights, April 1977 (Available from the Canada Grains Council, Suite 400, 177 Lombard Avenue, Winnipeg, Manitoba, R3B OW5).

(2) Gamble, E.E., ed., Proceedings of a Conference on Plant Breeding and Breeders' Rights in Canada, Crop Science Department, Ontario Agricultural College, University of Guelph, 15-16 June 1971.

(3) Library of Parliament, Plant Breeders' Rights, A Collection of Papers on the Subject (Library of Parliament).

(4) Mast, H., "The Organization and Work of UPOV", Seed Science and Technology, Vol. 3, 1975, p. 377-386.

(5) L'Union internationale pour la protection des obtentions végétales, International Convention for the Protection of New Varieties of Plants (1978 Revision), UPOV, Geneva.

(6) Canada, House of Commons, Bill C-15, An Act respecting plant breeders' rights, 2nd Session, 34th Parliament, reprinted as amended and reported 29 November 1989 by a Legislative Committee.

ACCO®

ACCOPRESS™

YELLOW	25070	JAUNE
*BLACK	25071	NOIR*
*BLUE	25072	BLEU*
RL. BLUE	25073	RL. BLEU
*GREY	25074	GRIS*
GREEN	25075	VERT
RUST	25078	ROUILLE
EX RED	25079	ROUGE

ACCO CANADA INC.
WILLOWDALE, ONTARIO

* INDICATES 75% RECYCLED 25% POST-CONSUMER FIBRE

*SIGNIFIE 75 % FIBRES RECYCLÉES, 25 % DÉCHETS DE CONSOMMATION

BALANCE OF PRODUCTS 25% RECYCLED

AUTRES PRODUITS: 25 % FIBRES RECYCLÉES


0 50505 25072 1